BEFORE THE STATE OF CALIFORNIA ENERGY COMMISSION

California Energy Commission
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In the matter of: Comprehensive Energy Efficiency Program for Existing Buildings (AB 758 Program)	Docket No. 12-EBP-1 WORKSHOP RE: COMPREHENSIVE ENERGY EFFICIENCY PROGRAM FOR EXISTING BUILDINGS SCOPING REPORT

REQUEST FOR EXTENSION OF TIME TO MAKE COMMENTS AND COMMENTS OF PROCTOR ENGINEERING GROUP, LTD. IN RESPONSE TO THE REQUEST FOR COMMENTS ON THE COMPREHENSIVE ENERGY EFFICIENCY PROGRAM FOR EXISTING BUILDINGS SCOPING REPORT

Submitted by:

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Dated: October 29, 2012

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I.

INTRODUCTION

Proctor Engineering Group, Ltd. (PEG) hereby submits a request for extension of time to make comments and to submit comments on the comprehensive energy efficiency program for existing buildings scoping report. Proctor Engineering is a small company without staff devoted to responding to CPUC and CEC dockets. Our CEO was occupied responding to the Cost Effectiveness Reply comments to the CPUC during the time that the CEC deadline occurred.

Proctor Engineering Group, Ltd. is a research, development, and implementation firm headquartered in San Rafael, California. PEG designs and brings to market new products and services that reduce energy consumption in residential and small commercial buildings. The San Rafael offices include the corporate headquarters, research laboratories, and data capture facilities for projects and programs across the United States and in the Arabian Peninsula.

We strongly support the Commission's initiative to provide a comprehensive energy efficiency program for existing buildings in line with AB 758. This process is essential since it will determine the extent to which the State's goals of reduced greenhouse gas emissions and improved energy efficiency can be achieved. Without producing an inclusive program that is applicable and applied to a wide range of California's existing buildings the goals cannot be achieved. Reliance on a single approach that is relevant only to a small number of homeowners or building owners will not accomplish comprehensive energy efficiency savings with extensive energy savings and peak reductions "left on the table".

II
SUMMARY

Proctor Engineering respectfully requests that the Commission accept these comments filed after October 23, 2012. We respectfully request that the Commission consider the following:

- Putting "all the eggs in one basket" is a high risk approach to a comprehensive energy efficiency program for California.

- An "all hands on deck" approach increases the probability that one or more approaches will achieve significant market penetration and produce the needed energy efficiency upgrades.

- An all hands on deck approach could use simplified administration producing a more cost effective program in line with AB 758's provision that the Commission consider: "The most cost effective means and reasonable timeframes to achieve the goals of the program." (Section 2 c 2)

- An all hands on deck approach could use simplified reporting in line with AB 758's provision that the Commission consider: "The most effective way to report the energy assessment results and the corresponding energy efficiency improvements to the owner of the residential or nonresidential building ...". (Section 2 c 5)

- An all hands on deck approach could include a broad range of measures delivered by a wide range of means to meet the AB 758 provision that the Commission consider: "A broad range of implementation approaches...". (Section 2 c 7)

- An all hands on deck approach could minimize costs in line with the **mandate** that: "Minimize the overall costs of establishing and implementing the comprehensive energy efficiency program requirements." (Section 2 d 1)

III
COMMENTS

1. Proctor Engineering Group Ltd. respectfully submits the following comments on the points in the above summary:

- It is recognized by all concerned that the Energy Upgrade California (EUC) was not an overwhelming success. To provide energy efficiency retrofits deeper into the population of existing buildings in California it is necessary to have a wider approach that recognizes that not only is a "Building a System", but also that "The Market is a System". The market contains a variety of building owners that have a variety of financial assets. Not everyone, not even most building owners can afford or are sufficiently motivated to spend the amount of money necessary to produce the deepest energy retrofits that some people define as comprehensive.

- While financing options may widen the number of available participants, it will fall far short of including as many homes and small commercial buildings needed to meet the goals of the Commissions (Energy Commission and Utility Commission) and AB 758.
- As noted in the October 8 workshop by Ms. Foley, program approaches like Energy Upgrade California are just part of a spectrum of approaches that are available to the Commission.
- Widening the approaches to energy efficiency and recognizing the limits of the marketplace is essential to providing deeper energy retrofits and statewide more comprehensive energy savings. One approach is to utilize the owners' motivation when it occurs. Analysis of the 2011 building permits in Sacramento sheds light on motivation that is sufficient to spur owners into action. Figure 1 shows the percentage of building permits by category in 2011.

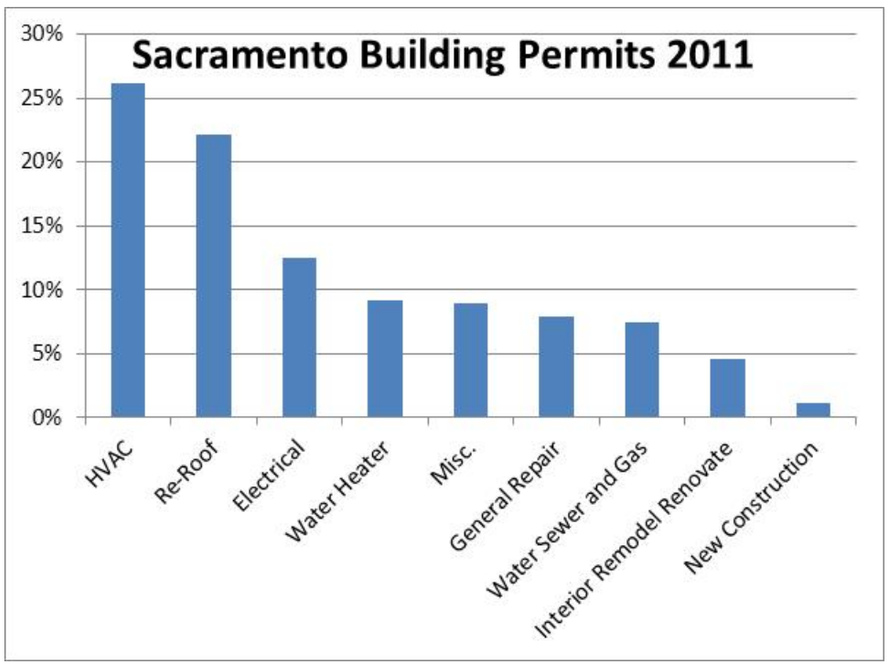

Figure 1. Sacramento Building Permits

- Notably the largest number of building permits was for HVAC replacements. This suggests that attention to the interactions at HVAC replacement is a viable target for deeper retrofits. Within the existing Title 24 regulations, three opportunities are already mandated. First, the ducts attached to the HVAC system need to be tested and leakage needs to be reduced. Second, the system must have airflow in excess of 300 CFM per ton (a very low threshold of acceptance). Third, the system must have the proper amount of refrigerant in the system. These three items require verification by a HERS rater on an individual basis or as part of a sampling system. These requirements are very cost effective energy savings items.
- In spite of the regulation and the cost effectiveness of the measures necessary for compliance, the vast majority of replacement HVAC systems are not installed under a building permit that would result in significant energy savings. The total number of permits issued for HVAC in Sacramento in 2011, was 1925. This is in a city where at least 10,000 air conditioners were replaced in that year based on normal replacement rates. **It is clear that enforcing the existing building standard for existing HVAC systems would reap huge positive results.**
- HVAC replacement also is a time wherein the building owner should be informed of other opportunities including higher efficiency replacement equipment, improved duct insulation, and upgraded return duct systems for higher airflow. This is easily within the grasp of existing HVAC contractors if they were sufficiently motivated.

- HVAC replacement is also a logical time to inform customers of other energy savings opportunities such as insulation, air sealing, and window upgrades. These latter items are outside the normal purview of most HVAC contractors, but with a simplified check list approach the contractors could provide basic information to the building owners. These opportunities are now being lost.
- The second highest number of permits is for reroofing. Reroofing is a perfect opportunity to introduce more attic insulation and the possible inclusion of a radiant barrier. These concepts could be routinely presented to the building owners when discussing replacement roofing.
- Other opportunities present themselves within the discussions of the electrical and water heating upgrades. These discussions are less related to the immediate need felt by the owner, but introducing these measures in a simple checklist approach could begin a thought process for the customer.
- Notably remodeling and renovating are only 5% of the permits. The $10,000 to $40,000 price range for these projects puts them out of reach for most Californians. **This illustrates how narrow the opportunities are if one insists on exclusively supporting the deepest energy retrofits and complex assessments within the program.** To achieve the energy savings and peak reduction necessary to meet the goals of the Commissions, a much wider net must be used – targeting all economic levels to the degree that they can participate and be part of the solution.

2. Proctor Engineering Group Ltd. respectfully submits the following comments on the points brought up in the October 8th workshop:

1. It is sometimes assumed that training and certification of technicians will insure that the application of energy efficiency measures is done properly. The research that we are aware of does not support that assumption. A double blind study of air conditioner installations showed the results in Figure 2 with respect to duct sealing and proper refrigerant charge.

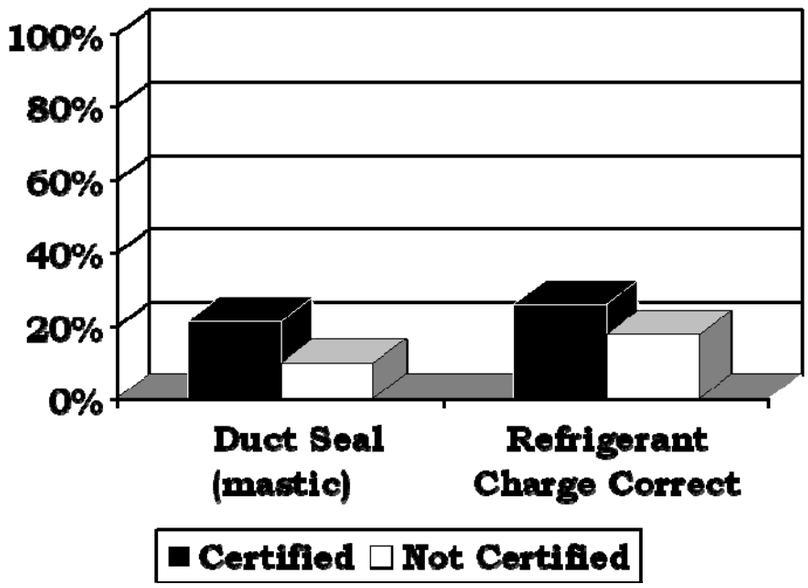

Figure 2. NATE Certified vs. Not-Certified AC Installation Results

- Note that while the units installed by the trained and NATE certified individuals were slightly better than the non-certified technicians. They were still extremely low (less than 30% compliance) and far from producing proper duct sealing and refrigerant charge on the units.

- The same study looked at the amount of airflow across the evaporator coil and found more flow deficient units installed by the certified contractors than by the non-certified ones.

2. Commissioner McAllister indicated a desire for a punch list for the long term planning. We submit the following for consideration:
    - Target customers that have the most to gain from energy efficiency improvements (high users per square foot, high summer use over base use, etc.)
    - Target situations within the market wherein the customer is more open to an energy efficiency improvement on top of their felt need (heating or cooling emergency parlayed into duct sealing, higher efficiency units, insulation, air sealing, duct insulation, etc.)
    - Support incremental improvements in customer's energy efficiency to capitalize on every opportunity while informing the customer of expanded opportunities.
3. Proctor Engineering Group Ltd. respectfully submits the following comments on the questions posed for the October 8th workshop:

- Metrics – AB 758 program initiatives should be measured by:
    - Whether they cause a customer to install a more efficient measure than would otherwise be installed by the customer.
    - Whether they are installed to a sufficiently wide customer base that they can have a significant impact on the energy consumption and peak load of the State.
- Quality Assurance – Quality assurance needs to be applied by the design and adjustments to the delivery system so that the system produces proper

installations. This requires constant vigilance – not just training and certification. It requires decertification as well as certification. It requires limited inspection by truly independent inspectors.

- Energy Ratings – Energy ratings are of variable quality and have significant variations even on one building. As such ratings provide little real guidance to a building owner.
- Low Income Customers – Low income programs under DOE and utilities are excellent locations for widening the spectrum of applied measures. The Commission should work with these entities to include more cost effective measures in the programs.
- Moderate Income Customers – The financial situation of moderate income customers precludes most of them from participating in programs with high levels of complication and cost. Programs need to be designed to provide energy efficiency upgrades at appropriate levels. This would include incremental retrofits for air sealing, duct sealing, AC control upgrades, AC selection for Hot Dry Climates, etc. rather than only “all out” retrofits.

- Non-Energy Benefits – Non-Energy Benefits are extremely difficult to monetize for calculations. The current incarnation of the TRC benefit cost ratio is biased because it contains Non-Energy Costs without including Non-Energy Benefits.

$$Current\ TRC\ Ratio\ = \frac{Energy\ Benefits}{Energy\ Costs + NonEnergy\ Costs}$$

One solution would be to add the Non-Energy Benefits to the ratio. However, monetizing Non-Energy Benefits is difficult and subject to high levels of uncertainty.

A second solution would be to remove the Non-Energy Costs from the ratio.

$$Energy\ Only\ TRC\ Ratio\ = \frac{Energy\ Benefits}{Energy\ Costs + \sout{NonEnergy\ Costs}}$$

This solution provides the desirable element of elegant simplicity. Under this solution the cost of an energy efficiency measure would no longer be the average cost of the measure to all customers but rather than the basic cost of the measure, which is the least cost of the measure in the marketplace. This change would eliminate counting consumer whistles and bells within the cost. An example – by examining the permit records of Sacramento for one year, we find that the average cost of an air conditioner replacement in Sacramento is two thirds higher than the tenth percentile cost.

There are essentially two electrical systems in California, which are running on top of each other. One system is the base system. The costs associated with that system should be attributed to the end uses that make up that load. The second system is the peak system. The peak system operates somewhere around 250 hours a year. That system is operated over the same transmission and distribution system as the base system, but it is responsible for the marginal energy costs during those times and is responsible for the capacity costs to meet the load that is in excess of the base system load. The benefits from reducing the peak system use should be attributed to the end uses that

make up that excess load (air conditioning). This would properly attribute value to these end uses and result in much higher implementation of programs that actually reduce peak costs.

- Building Simulation Tools and HERS-lite – The use of building simulation tools is unnecessary. With reasonable training and true quality assurance, a simple checklist is sufficient to derive a realistic priority list for residential buildings. A simulation tool is “gilding the lily”.

A. CERTIFICATE OF SERVICE

I, John Proctor, certify that I have, on this date, served a copy of "Request for Extension of Time to make Comments and Comments Of Proctor Engineering Group, Ltd. in Response to the Request for Comments on the Comprehensive Energy Efficiency Program for Existing Buildings Scoping Report" by transmitting an e-mail message with the document attached to docket@energy.ca.gov. Electronic copies of comments were also sent to Commissioner McAllister's advisor at David.Hungerford@energy.ca.gov and Commissioner Ferron's advisor at michael.colvin@cpuc.ca.gov.

I declare under penalty of perjury, pursuant to the laws of the State of California, that the foregoing is true and correct.

Dated October 29, 2012 in San Rafael, California.

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